THE REVIEW

DEVOTED TO THE INTERESTS OF THE AMERICAN SOCIETY FOR METALS

Volume VII | Entered as Second Class Matter, July 26, 1930, at the Post Office at Cleveland, Ohio, under the Act of March 3, 1879 | MARCH, 1934 | No. 2

PHILADELPHIA MEN HEAR DR. SAUVEUR

M. E. Leeds Also on Program of "Sustaining Member Night"

By Adolph O. Schaefer

"Sauveur Night" and "Sustaining Members' Night" combined to make Philadelphia's Feb. 23 meeting a record-breaking occasion.

One hundred and fifty members and guests braved the icy streets to attend the dinner preceding the meeting. This dinner was held to honor the chapters' sustaining members, all of whom had representatives present.

Morris E. Leeds, president of the Leeds & Northrup Co., one of the chapter's sustaining members, addressed the dinner gathering on "The Significance of NRA."

From his first-hand knowledge of the problems involved, Mr. Leeds reviewed the conditions under which NRA was born, and the process by which a code is made. He said that the great majority of misunderstandings arising between labor and management are slight and easily settled.

Another point stressed by Mr. Leeds was that all of the ideas with a socialistic trend in the codes have come, not from the government, but from the industry applying for the code.

The chapter meeting was designated as Sauveur Night, and the opportunity was taken to pay tribute to a great metallurgist who has always been a close friend of the Philadelphia chapter.

Dr. Sauveur spoke on some recent experiments on malleableizing cast iron by means of various heat treatments.

The structure of the matrix has been found to be the most important factor in determining the tensile properties of malleable cast iron. A structure in which there is residual combined carbon, and in which this constituent is in a spheroidized condition, is found to result in a malleable iron of the highest tensile strength with good ductility. This structure shows higher physical properties than a malleable iron with a sorbitic matrix.

At the close of Dr. Sauveur's speech, Mr. Moore, chairman of the Philadelphia chapter, presented him with a cigar humidor on behalf of the chapter. This humidor bears a silver plate inscribed with an expression of appreciation of Dr. Sauveur's work and his friendship for the Philadelphia chapter.

DETROIT NOW HAS DOUBLE MEETINGS

Choice of Hearing Ferrous or Non-Ferrous Talks Offered

By Scott C. Taylor

H. W. Graham of Jones & Laughlin Steel Corp. presented a very interesting paper on "Free Cutting Steel" at the January meeting of Detroit chapter.

From the obvious need for a simple test for machinability of this type of steel, the speaker soon came to the conclusion that the best way to measure cutting quality of steel was to put bars through a standard automatic machine. He found a critical relationship of feed and tool life for any given lot of steel, i.e., if the automatic screw machine is operated just below this critical speed, tool life will be good and maximum production will be obtained.

The ideal condition for machinability is a steel which is soft and brittle and which does not harden greatly during deformation to rupture. Bessemer steel answers this specification admirably, except that it has a fairly high order of work-hardening capacity and this fact indicates the line along which efforts must be expended, namely, to decrease the hardening during machining.

Non-Ferrous Meeting

Starting with the January meeting about 70 members who were interested in non-ferrous work adjourned after dinner to another room and listened to a paper by Dr. P. V. Faragher of the U. S. Aluminum Co. The speaker gave a very clear and interesting description of the production of aluminum from ore to the finished product.

To the Members of the A.S.M.

Gentlemen:

The new constitution adopted in December provides that each local chapter which is eligible to have a member on the nominating committee shall annually select one candidate for the nominating committee from the local chapter membership and the name of the candidate shall be sent to the president prior to March 1 of each year.

This procedure has been followed. From the list of candidates suggested by the chapters, the president is required to appoint a nominating committee of seven.

The constitution further provides that in appointing the nominating committee the president shall select members thereof in such a regional manner as to be equitable to all chapters of the Society.

Pursuant to the instructions given in the constitution, I have selected the following seven members to form the nominating committee who will select candidates for office for the A.S.M. for the ensuing year. The committee follows:

Chairman: Prof. Bradley Stoughton (Lehigh Valley Chapter)
Professor of Metallurgy, Lehigh University, Bethlehem, Pa.

Gordon A. Webb (Detroit Chapter, Chairman)
59 Seward Ave., Detroit, Mich.

Arthur T. Clarage (Chicago Chapter)
President, Columbia Tool Steel Co., Chicago Heights, Ill.

F. P. Flagg (Boston Chapter)
Chief Chemist, Waltham Watch Co., Waltham, Mass.

J. B. Johnson (Dayton Chapter)
Chief, Material Branch, Wright Field, Dayton, Ohio

R. M. Pease (St. Louis Chapter)
Manager, Axelson Machine Co., St. Louis, Mo.

Gerald R. Brophy (Schenectady Chapter)
Research Laboratories, General Electric Co., Schenectady, N. Y.

The constitution further provides that the names of the nominating committee, as herewith submitted, shall be published for the benefit of the members of the Society in one of the publications of the Society prior to April 15.

This nominating committee will meet during the third full week in the month of May, at a place designated by the chairman, and shall name one candidate for each of the following offices:

President	1 year
Vice president	1 year
Secretary	2 years
Two directors for	2 years each

For your information, I am quoting herewith, an abstract from Article IX, Section 1 (b) of the constitution:

"As an aid in making nominations, the Nominating Committee, and particularly the Chairman of the Committee, may canvass the executive committee of local chapters for written endorsements for consideration by the Nominating Committee. The Nominating Committee shall also give consideration to written endorsements forwarded by individual members or representatives of members of the Society to the Nominating Committee for its consideration. Endorsements of a local executive committee shall be confined to members of its local chapter or representatives of firms or corporations which are members of its local chapter, but an individual member or representative of a member of the Society may suggest any qualified members or representatives of members of the Society for consideration by the Nominating Committee. Immediately after the candidates are thus nominated, the Nominating Committe shall report the names of the nominees to the Secretary and the report shall be published by the Secretary in one of the publications of the Society not later than June 15th of the same year."

Further, I wish to point out that the executive committee of a chapter is not limited in its endorsement of its members submitted to the nominating committee for consideration to *one* member, but may submit its endorsement of *one or more* members of its chapter who the executive committee feels would make desirable national officers.

Yours very truly,

W. H. Phillips

President
AMERICAN SOCIETY FOR METALS

Pittsburgh, Pa.
March 12, 1934

SOUTHERN OHIO MEN PLAN BIG MEETING

Three Chapters Will Meet in Columbus on April 24th

One of the outstanding gatherings of any year for southern Ohio members of the American Society for Metals is the annual tri-chapter meeting of the Cincinnati, Dayton and Columbus chapters. This year the meeting will be held in Columbus on Tuesday, April 24.

An unusually interesting program is in prospect. All interested persons are invited to attend. The officers of all chapters are urged to call this meeting to the attention of their members.

The general subject of all talks is to be "Grain Size in Steel." The following list of speakers and subjects has been arranged:

C. H. Herty, Jr.: "Steel Making and Grain-Size Control."
C. E. Sims: "Grain Size in Steel Castings."
R. L. Kenyon: "Importance of Grain Size of Sheet Steel for Deep Drawing."
H. W. McQuaid: "Grain Size in Carburizing and Forging Steels."

It is planned to have Dr. Herty, Mr. Sims and Mr. Kenyon on the afternoon program, which will start at 1:30 p. m. at Battelle Memorial Institute.

A dinner will be held at 6:30 p. m. Mr. McQuaid will give the evening talk.

The interest in grain size is very keen at this time. The ability and reputation of the various speakers is well known. A large attendance from neighboring chapters is anticipated and will be cordially welcomed.

MOLYBDENUM TALKS HEARD BY MONTREAL

Messrs. Kissock, Herzig and Loeb Are Speakers Jan. 8

By Gordon Sproule

Montreal Chapter held its regular monthly meeting on Jan. 8 at the Windsor Hotel. The meeting was preceded by the usual dinner, and exhibits were displayed by two of our Sustaining Members, Messrs. Jenkins Bros. and Sorel Steel Foundries.

The subject of the evening, "The Development of the Use of Molybdenum," was presented by Alan Kissock of the Climax Molybdenum Co., assisted by Alvin J. Herzig and Carl M. Loeb, Jr., of their research and development departments.

Mr. Kissock introduced the subject in a general way, giving historical and statistical data. Mr. Herzig followed with a technical explanation of the nature of the element and its effects upon alloys of iron, and Mr. Loeb concluded with a detailed account of the results of adding "moly" to cast iron.

The late J. Kent Smith was quoted several times in the course of Mr. Loeb's lecture. To him was credited the dictum that molybdenum was not intended to make bad iron good, but to make good iron—iron low in carbon and impurities—better.

No rule of thumb methods can be resorted to in recommending the proper analysis for alloy irons, because no blanket method applies to all irons from various cupolas. The proper and most economical mixes can be determined by testing, along with the cooperation of men familiar with the alloys.

REAL TALENT UNEARTHED FOR LEHIGH MEN'S ANNUAL PARTY

Chapter Members Are Versatile

By H. F. Paulus

The Lehigh Valley chapter held its annual dinner meeting Jan. 5 at Hotel Traylor in Allentown. As an innovation, every feature of the meeting was presented by a member of the Society.

During the dinner Leon Scheifele, of Reading, rendered vocal selections from the opera, "Pagliacci," and A. C. Jones, of Lebanon, sang "Oh, That Summer Smile for Ain," accompanied by W. F. Longacre. Both singers displayed vocal ability seldom encountered outside of professional circles.

Professor L. F. Witmer then introduced W. H. Phillips, president of the A. S. M., who discussed the outlook for the year 1934. After remarks by Messrs. Shepherd of Ingersoll-Rand Co., Greene of Carpenter Steel Co., and Gifford of Bethlehem Steel Corp., the speaker of the evening, Professor Bradley Stoughton, head of the metallurgical department of Lehigh University, delivered an illustrated address on the subject, "Metallurgy—Primitive, Medieval, Modern."

Professor Stoughton's address was of an historical rather than purely technical character and proved extremely interesting to laymen as well as metallurgists.

PENN CHAPTERS TO STAGE BIG MEETING

Excellent Program Planned for May 4-5; Open Invitation

The four Pennsylvania chapters and the Southern Tier Chapter of the American Society for Metals will unite in an inter-chapter meeting at State College, Pa., May 4 and 5. Members of the society and their friends will be the guests of the Pennsylvania State College and the meetings will be held in the Mineral Industries Building.

A large attendance is expected of metallurgists, executives, and others interested in metallurgical affairs. A notable program has been arranged with papers sponsored by each of the five chapters and by the Department of Metallurgy of the College as follows:

"Steel—Its Selection and Application for General Shop Practice," by Frank J. Allen, standardization engineer, York Ice Machine Corp., York, Pa.

"Some Phases of Engineering Uses of Aluminum Alloys," by E. H. Dix, Jr., metallurgist, Aluminum Co. of America, New Kensington, Pa.

"The P. F. Characteristics of Steel," by B. F. Shepherd, Ingersoll Rand Co., Phillipsburg, N. J.

"The Effect of Gases on Ferrous Materials at High Temperatures and High Pressures," by Harold L. Maxwell, metallurgist, E. I. du Pont de Nemours and Co., Wilmington, Del.

"Decomposition of Supersaturated Solutions with Particular Reference to Austenite," by G. B. Upton, Cornell University.

"Research in the Steel Industry," by John Johnston, director of research, U. S. Steel Corp., Kearny, N. J.

State College, located almost exactly in the center of Pennsylvania, is easily reached by automobile over fine roads, or by good bus service from the Main Line of the Pennsylvania Railroad at Tyrone, Huntington, and Lewistown, and from Bellefonte, on the Bald Eagle Valley Branch.

Those desiring hotel accommodations will find it advisable to reserve rooms early through D. F. McFarland, department of metallurgy, Pennsylvania State College. The Junior Prom is being held at the same time so the demand for hotel rooms is especially keen, making *early reservations* necessary.

CORRECTING RECENT LIST OF CHAPTER OFFICERS

The list of chapter officers in the February issue of *Transactions* contained two errors. These changes will correct the list:

Dr. M. A. Grossmann, Illinois Steel Co., Chicago, is the present chairman of the Chicago chapter.

H. A. Anderson, Johnston Manufacturing Co., Minneapolis, is chairman of Northwest chapter this year.

NEW YORK SHOW IS INSTANTLY POPULAR

Floor Plans Just Mailed; 5 Societies Planning Programs

Previous exhibitors in National Metal Expositions only a few days ago received floor plans of the 16th annual Exposition, but already they have reserved several thousand square feet of exhibit space.

This "by return mail" response, together with the plans which the A.S.M. Publication Committee is carrying out indicate that New York City between the first and the fifth of October will be the metallurgical Mecca of the United States.

The show will be held in Commerce Hall in the Port of Authority Building at 14th St. and Eighth Ave., New York. The hall is tremendously large (the mammoth Ford show was held there last fall) and is built to accommodate the heaviest exhibits of the Exposition. Facilities for supplying necessary services for operating exhibits are available at low rates, in many cases considerably lower than those prevailing in other cities. The show will be strictly "open shop."

Several technical societies are cooperating with the American Society for Metals in this 16th National Metal Congress and Exposition. The American Welding Society, the Wire Association and the Institute of Metals and Iron & Steel divisions of the American Institute of Mining and Metallurgical Engineers are even now preparing plans and programs for the occasion.

Every possible effort will be made this year to keep disinterested visitors, minors and school children from the exposition and from the various sessions. This will insure that members of the Societies and other interested consumers and fabricators of metals will be able to see the exhibits and hear the papers with a minimum of distraction.

MODERN CAST IRON IS NEW YORK TOPIC

J. T. MacKenzie Tells What Research Has Discovered

By F. H. Clark

"Modern Cast Iron" was discussed by Dr. J. T. MacKenzie, chief chemist and metallurgist for the American Cast Iron Pipe Co. of Birmingham, at the February meeting of the New York chapter.

Dr. MacKenzie stated that graphite formation was one of the most important yet most troublesome constituents of cast iron. He showed photomicrographs illustrating the influence of wall thickness and rapid cooling on producing finer graphite flakes. According to Dr. MacKenzie, the sudden expansion of cast iron during solidification is due to graphite formation. As more graphite is formed, hardness increases and permanent set decreases.

The presence of sorbitic pearlite increases the amount of bend possible as shown by bending curves. The modulus of rupture is influenced by the shape of the piece, whether a channel, rectangle, square or round bar. Cast iron shows up the poorest in reversed bending where both compression and tension are factors.

Dr. MacKenzie said that in fatigue, cast iron is not influenced by notches and grooves because a notch that gave a decrease of 70% fatigue strength of steel gave only a 10% decrease in fatigue strength of cast iron.

During the discussion which followed, A. B. Kinzel pointed out that producing a cast iron suitable for nitriding was most difficult. Dr. MacKenzie replied to a question by J. S. Vanick that phosphorus did influence graphite formation. In reply to J. S. Marsh, the speaker stated that he believed that austenitic cast iron would probably have high damping capacity like ordinary cast iron, although no tests had been made.

Dr. R. Aborn asked concerning growth and oxidation of cast iron. Dr. MacKenzie replied that these factors were most important and that even superheated steam at 500° F. will influence the growth and further, in reply to Mr. Kahn, the speaker stated that cast iron was not suitable for turbine casings subjected to a temperature of 475° F.

THE REVIEW

Devoted to the interests of the American Society for Metals

A Review of the Activities of the Chapters and National Organization

Published November, January, March, May, July and September by the
AMERICAN SOCIETY FOR METALS
(FORMERLY AMERICAN SOCIETY FOR STEEL TREATING)
7016 Euclid Ave., Cleveland, O.

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Subscription $.50 a year; 5 cents a copy

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Volume VII Cleveland, O., March, 1934 No. 2

CAST BRONZES ARE ONTARIO'S SUBJECT

O. W. Ellis Tells of Their Structure, Properties

By John W. McBean

At the January meeting of Ontario chapter, held in Hamilton, both the coffee talk and the technical address were delivered by members of the chapter. Mr. Davis first told of a motor trip through some of the American National Parks which made us feel that we should have been in the party.

We were then favored with an exposition of the properties and structure of cast bronzes by Owen W. Ellis of the Ontario Research Foundation.

Microscopic examination of a bronze casting reveals the presence of two constituents — one relatively soft, the other distinctly hard. The softer constituent is characterized by marked variations in appearance after etching which can be modified and eventually eliminated by suitable annealing. If the phosphorus content of the bronze is sufficiently high, another constituent will appear.

The proportion of the hard constituent in any cast bronze varies directly with the tin content, increases with the rate of cooling and as the pouring temperature is reduced.

These alloys have a relatively wide range of freezing. There is no one pouring temperature that can be given for bronze, but for most castings pouring at about 2075° F. produces excellent results.

Effects of various elements were then considered. Phosphorus, it was noted, could be used merely as a deoxidizer, or it might be added to change the mechanical properties of bronze. In many cases it is desirable rather to increase the tin content in an alloy than to raise the phosphorus.

The effects of zinc and nickel were dealt with in some detail. The fact that lead does not reduce the maximum stress and resistance to impact of bronze as much as it does those of other alloys was pointed out. The value of lead in improving the machinability of bronze was also mentioned.

MARSH TELLS NEW YORK ABOUT INTERMETALLIC EQUILIBRIUM

Chapter Holds Meeting Jan. 15

By F. H. Clark

The New York chapter held its January meeting on the 15th. J. S. Marsh of the Alloys of Iron Research spoke on "Intermetallic Equilibrium."

Studies on reaction rates by E. C. Bain have shown how very important the time factor may be and Mr. Marsh believes that many equilibrium diagrams may be revised in the future as a result of further experiments along these lines.

Transformations important in metallic systems are changes from liquid to liquid, solid to solid, liquid to solid and the reverse. Phase boundaries which are lines in binary systems become surfaces in ternary systems. Mr. Marsh traced the logical development of the equilibrium diagram from the simplest type of a mixture of two insoluble metals through all the complications of eutectoid, peritectic and intermetallic compound. One difficulty in establishing solid solubility lines is the fact that particle size exerts a marked influence, the smaller size particle accelerating the solubility rate.

Mr. Marsh believes that metallic systems would be better understood not only by more careful application of the phase rule but by the application of other physical chemical concepts and by clearer visual pictures.

SCHENECTADY HEARS NORRIS

Tells Progress in Alloy Steels

By L. L. Wyman

The February meeting of the Schenectady chapter was held on Feb. 13, the speaker being one of our own members, W. H. Norris of Ludlum Steel Co. He gave an extremely interesting and instructive lecture on special steels, the past and present practices in their manufacture and rolling.

The steady progress of this art was indicated by the superior qualities of the special steels of today, due to the present high quality electric furnace products as compared to the earlier crucible steels.

Mr. Norris was the center of a very lively discussion, and proved himself to be a good man on the "catching end."

CLEVELAND HAS BIG MEETING IN MARCH

Dr. Merica Talks; Handbook Committee Attends Dinner

By H. B. Pulsifer

Members of the Cleveland chapter turned out in force at the sixth regular meeting of the season. It was a big meeting from start to finish.

The meeting of the Recommended Practice Committee in Cleveland at this time gave the chapter the opportunity to welcome the members at the dinner and learn something about each. Chairman Van Horn was at his best in presenting these distinguished metallurgists and awarding each some appropriate memento. Herty, Donnellan, Archer, Fischbeck, Gill, Knowlton, Lounsberry and Smith wore their carnations gracefully and modestly accepted their awards.

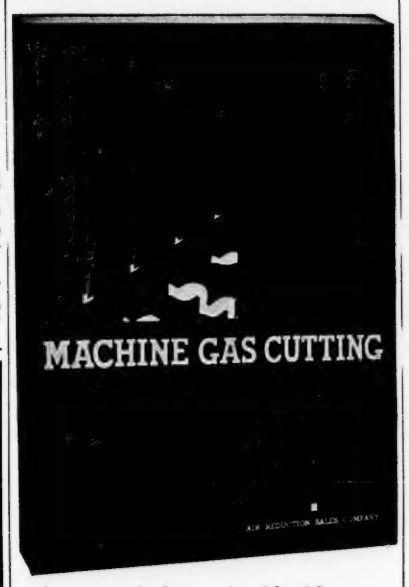
Dr. Joel Hayden, who gave the coffee talk, is head master at Western Reserve Academy, Hudson, O. He is a penetrating psychologist and a thorough student of human nature.

Chairman Van Horn then called on Hugh Brown for a report of the membership committee; the nominating committee of Benninghoff, Emmons and Ayling was appointed, and President Phillips and Secretary Eisenman were asked to give remarks.

Dr. Zay Jeffries, as technical chairman, reviewed the origin and development of age hardening alloys, with emphasis on the part that Dr. Merica played in discovering the explanation of the phenomenon. He mentioned that the original theory was so well founded that it has hardly been modified and now serves as the correct explanation for the hundreds of alloys exhibiting the phenomenon. He then introduced Dr. Paul D. Merica, assistant to the president, International Nickel Co., as the speaker of the evening.

Dr. Merica started with the age hardening silver-copper system as an example and reviewed the important types and classes of precipitation that cause age hardening. He made a masterful review of the whole field where hardening occurs, ending with the numerous cases in the realm of iron and steel.

Offer Gas Cutting Booklet to A.S.M.



A copy of this valuable 92-page booklet will be sent to men of responsible position who write on their company letterheads, stating their position, to the A. S. M., 7016 Euclid Avenue, Cleveland.

Executives and engineers of metal working plants will be greatly interested in the 92-page booklet, "Machine Gas Cutting," which Air Reduction Sales Co. has just prepared.

The booklet is packed with possibilities for improving design, speeding up production and effecting economies in the manufacture of steel parts of every description and in the modern practice of welded fabrication. Numerous examples drawn from machine shops, steel mills, shipyards, railroad shops, boiler works, forge shops and many other metal working plants, strikingly illustrate the wide scope of the machine gas cutting process.

Because of its cost, distribution of this booklet, "Machine Gas Cutting," is limited to those in responsible positions. Copies will be sent to A.S.M. members who request a copy on their company letterhead, indicating their positions. These letters of request should be mailed to American Society for Metals, 7016 Euclid Ave., Cleveland.

AUDITED FINANCIAL STATEMENT

Given below is balance sheet and operating statement as presented by Ernst and Ernst after an audit of the Society books.

BALANCE SHEET
AMERICAN SOCIETY FOR METALS—CLEVELAND
As of the close of business December 31, 1933

ASSETS

CASH			
ON HAND			
Petty cash fund	$ 400.00		
Undeposited receipts	1,483.12	$ 1,883.12	
ON DEPOSIT (United States and Canadian Banks)			
Savings accounts	$ 3,669.46		
Commercial accounts	4,294.50	7,963.96	$ 9,847.08
SECURITIES			
U. S. Government bonds	$ 49,831.90		
Other bonds	83,800.00	$133,631.90	
Accrued interest		2,424.59	136,056.49
ACCOUNTS RECEIVABLE			
Advertising	$ 8,768.78		
Miscellaneous	2,442.24		
Convention 1931-1933	707.70	$ 11,918.72	
Less: Reserve		1,719.49	10,199.23
INVENTORY (certified by management)			
Bound and unbound publications, books, paper stock, etc.			22,810.43
OTHER ASSETS			
Traveling advances, employees' accounts, postage deposits, etc.		$ 3,079.44	
Deposits in closed banks:			
Equity Savings and Loan Company—Cleveland	$ 3,592.80		
Union Trust Company—Cleveland	48.30	3,641.10	6,720.54
PERMANENT (book value)			
Office furniture, fixtures and equipment			3,780.00
DEFERRED			
Prepaid 1934 convention expense		$ 702.04	
Prepaid, "Metal Progress" publication expense		487.06	
Unexpired insurance premiums		266.97	1,456.07
			$190,869.84

LIABILITIES

ACCOUNTS PAYABLE			
For purchases, expenses, etc.		$ 4,923.89	
For apportionment of dues to chapters		546.77	
Credit balances—exhibitors, members, etc.		175.69	$ 5,646.35
RESERVES			
For conventions		$ 20,000.00	
For contingencies		20,000.00	
For H. M. Howe medal fund		5,000.00	
For general index		100.00	45,100.00
DEFERRED INCOME			
Publications			793.59
SURPLUS			139,329.90
			$190,869.84

INCOME AND EXPENSE
AMERICAN SOCIETY FOR METALS—CLEVELAND
For the year ended December 31, 1933

INCOME

"METAL PROGRESS"			
Advertising	$ 37,266.00		
Subscriptions	1,701.47		
Reprints	846.32		
Sales, binders, etc.	151.24	$ 39,965.03	
MEMBERSHIPS			
Membership dues	$50,227.36		
Sustaining exhibitors' dues	2,800.00	$ 53,027.36	
Less: Apportionment of dues to chapters	20,240.64	32,786.72	
1933 CONVENTION—DETROIT			
Space rentals	$ 29,442.50		
Program	1,645.00		
Miscellaneous	1,244.60		
Special services	207.70	32,539.80	
Books published and purchased for resale		13,253.73	
Interest earned		6,136.35	
"Transactions"—bound copies, subscriptions, etc.		2,392.20	
Discount earned		677.65	
"The Review"—advertising and subscriptions		554.91	
Miscellaneous		68.25	
TOTAL INCOME			$128,374.64

EXPENSE

"Metal Progress"	$ 40,508.04		
1933 convention—Detroit	26,992.73		
Books published and purchased for resale	12,876.26		
"Transactions"—bound copies, subscriptions, etc.	11,802.54		
"The Review"	2,086.39		
General expense	8,837.85		
Secretary's office	8,746.00		
Accounting department	3,883.77		
Recommended practice	1,567.58		
Directors' expense	1,380.01		
President's expense	665.50	$119,346.67	
E. D. Campbell memorial lecture expense		500.00	
National Committees		328.19	
Support of chapters		293.53	
Howe medal expense		111.71	
Sundry merchandise purchased for resale		108.45	
TOTAL EXPENSE			120,688.55
NET PROFIT			$ 7,686.09

ASK FOR THESE FREE PAMPHLETS

New Furnace Control

A new and unusual instrument for controlling the rate of heating with electric furnaces is announced by Lindberg Steel Treating Co. An interesting bulletin tells how this device "turns down the heat" on electric furnaces of any size. Bulletin Ar-66.

Non-Ferrous Annealing

General Electric Co. describes bell-type furnaces for annealing non-ferrous metals in a new folder which contains a great deal of data on operation and performance. Description of the furnace is from technical rather than sales angles. Bulletin Ar-60.

Penetrating Fluid

Major Kwick Products Co., assisted by Voris Laboratories, has introduced an entirely new penetrating fluid (not an oil) which rapidly loosens tight and rusty bolts, joints, etc. Approved and used by the Government. Bulletin Ar-73.

Useful Wall Chart

Wyckoff Drawn Steel Co. offers a big new wall chart full of such useful data as comparative machinability of S.A.E. steels, tables for selecting steels according to machinability, cold forming properties, carburizing and hardening ability. Many other easily-read tables make this a very valuable chart for office or laboratory. Bulletin R-101.

Furnace Insulation

Johns-Manville offers to those who design or operate furnaces a new 72-page book describing insulation methods which improve performance and reduce operating costs. Requirements for each particular type of heating equipment are analyzed and detailed recommendations made accordingly. Bulletin R-102.

High Strength Bronzes

Duronze high silicon bronzes are made by Bridgeport Brass Co. An attractive booklet describes the three types — their properties and application. One is for cold working; another is primarily for hot forging; the third has great hardness, unusual high strength and excellent resistance to wear and corrosion. Bulletin R-103.

Carbide Tools

Carboloy Co. has prepared an educational booklet which shows, principally by photographs, how Carboloy tools are made and in what forms they are most widely used. One section summarizes production savings reported by representative Carboloy users. Bulletin R-104.

Arc Welding Manual

Hobart Bros. offer a new edition of their manual of simplified arc welding. Chapters cover the arc, welding equipment, types of welds, weldability of metals, choice of electrodes, the carbon and metallic arcs, speed and cost of arc welding. A useful book. Bulletin R-105.

Forging Machines

National Machinery Co. has published a large and very attractive booklet which by excellent illustrations and well written text tells how modern forging machines are built and why they produce accurate, close-limit forgings. Bulletin R-106.

Die Steel

Firth-Sterling Steel Co. describes Cromovan Triple die steel in a new folder which gives analysis and complete recommendations for forging and heat treating. Explanation is made why high production records are possible. Bulletin R-106.

High Nickel Castings

International Nickel Co. has issued a useful and highly attractive booklet on castings of pure nickel, monel metal, Inconel, Everbrite and nickel silver. The booklet describes the proper uses of these castings in mechanical, corrosion resisting and decorative applications. Typical analyses and properties are given. Bulletin Mr-45.

Creep of Alloy Castings

Calorizing Co. offers a report presenting long time high temperature creep values on chromium-nickel alloys. This bulletin contains many pertinent data and recommendations as to safe working stresses for heat enduring castings at temperatures from 1400 to 2000° F. Bulletin Mr-26.

Quenching Handbook

E. F. Houghton & Co. have published an excellent 80-page handbook on the subject of quenching. More than 30 charts and photomicrographs help tell the story. A copy will be sent free to those who request it. Bulletin Jl-38.

Copper-Moly Iron

"The Technical Story of Toncan Iron Pipe" is the title of a valuable booklet issued by Republic Steel Corp. Manufacturing methods, welding technique and rust resistance are some of the important points covered in considerable detail. Physical properties are described in tables, charts and photographs. Bulletin Fb-8.

Economical Cleaning

Pangborn Corp. describes its Type GF blast cleaning barrel in a recent folder which not only tells about the machine but, more than that, illustrates the advantages of cleaning with sand or steel abrasives. The folder is a complete manual of operation for this equipment. Bulletin Mr-68.

Hardening High Speed

Spoilage is eliminated when high speed steel is hardened in Certain Curtain electric furnaces, claims a new booklet issued by C. I. Hayes, Inc. Grain growth is controlled and the most delicate tools develop maximum hardness without decarburization, scaling or fusing. Bulletin No-15.

Sheffield Steel

Wm. Jessop & Sons, Inc., in a recent publication explain why their Sheffield Superior oil hardening steel does not distort and is easily machined. They assign as reasons a special anneal and a proper balancing of the carbon, manganese and tungsten contents. Full details are presented in Bulletin Jn-61.

Air for Furnaces

All users of gas or oil-fired furnaces know the necessity for a dependable source of large volumes of air at low pressures. In an interesting folder Spencer Turbine Co. explains why their Turbo-Compressors give unfailing, economical air service. Many photographs and diagrams add interest. Bulletin Mr-70.

Uses of Molybdenum

Climax Molybdenum Co. offers a new and useful 50-page booklet dealing with the benefits conferred by molybdenum as an alloying element in iron and steel. In orderly fashion engineering data are presented and made clear with numerous tables and illustrations. Bulletin Au-4.

X-Rays in Industry

General Electric X-Ray Corp. has available a profusely illustrated brochure entitled "Industrial Application of the X-Ray," which gives the complete story of the field of application of this modern inspection tool. Valuable information is presented. Bulletin Ma-6.

New Hardening Method

All three vital factors in correct hardening are completely controlled by the new Vapocarb Hump method of hardening, which is well described in a Leeds & Northrup bulletin. The three factors are: Quench point, rate of heating, and furnace atmosphere. Complete details are given in Bulletin No-46.

Pickling Inhibitors

A pamphlet describing the nature and use of Grasselli Inhibitors is offered to those interested in pickling steel. It not only describes the merits of these inhibitors, but also gives a table of inhibitor strengths for use in pickling various steels. Bulletin Ap-95.

Darkfield Microscopy

Comparison is made of darkfield and brightfield metallographic examination in a 16-page publication of E. Leitz, Inc. The equipment necessary for darkfield microscopy is described and prices are given. Several sets of micros of the same field contrast the two methods of illumination. Bulletin Ja-47.

Thermocouples

Technical data on Chromel-Alumel thermocouples are well presented in a publication of Hoskins Mfg. Co. These thermocouples serve long and accurately up to 2000° F., and have been used for "high speed." The booklet lists these advantages and tells how make best use of them. Bulletin Fb-24.

The Prevention of Rust

"Proof of Results" is the apt title of a new booklet issued by Dearborn Chemical Co. Dozens of photographs, suported by an interesting text, show how No-Ox-Id keeps steel from rusting. Although railroad applications are featured, the booklet has many very valuable suggestions for rust prevention in general. Bulletin Mr-36.

Optics in Metallurgy

A surprisingly large number of uses for optical instruments in metal working are described in a new booklet of Bausch & Lomb Optical Co. Photomicrography is, of course, prominent among these, but this well illustrated booklet shows many other interesting optical instruments. Bulletin No-35.

Beryllium-Copper

Beryllium-Copper is a relatively new alloy produced by American Brass Co. which can be heat treated to tensiles as high as 181,000 lb. per sq.in. It is supplied in sheets, wire, rods, tubes and forgings. An excellent booklet gives full information on fabrication and treating. Bulletin No-89.

New Heat Controller

"Straight Line Control" of furnace temperature is possible with the Trendalizer Controller made by Brown Instrument Co. There is no zig-zagging across the control point, because this unique device changes its control action in accordance with both temperature trend and extent of deviation. Bulletin Sp-3.

Heat Resisting Alloys

Authoritative information on alloy castings, especially the chromium-nickel and straight chromium alloys manufactured by General Alloys Co. to resist corrosion and high temperatures, is contained in one of that company's publications. Bulletin D-17.

New Tempering Furnace

American Electric Furnace Co. introduces a new, low-priced electric air tempering furnace. It heats to 600° F. in 5 min. and to 1000° F. in 15 min., transfering heat to the work 50 times as fast as still air and six times as fast as salt. Bulletin Mr-2.

Electric Melting News

A unique résumé of each month's news about electric melting, high strength cast iron, etc., is published by Detroit Electric Furnace Co. It is an illustrated compilation of extracts from trade magazines. Busy men find it valuable and easy to read. Get on the monthly mailing list. Bulletin Jr-98.

Heat Controller

As a companion instrument to their new indicating pyrometer, Foxboro Co. has introduced a new and inexpensive temperature controller which is very dependable. Although simple to operate, it permits close control of temperatures. Bulletin Mr-21.

Carburizing Steel

An interesting booklet prepared by Union Drawn Steel Co. describes its Union Special carburizing steel and includes interesting records of tensile, hardness, bend, impact and crushing tests made with this steel in direct comparison with S.A.E. 1015 after various types of heat treatments. Bulletin Jr-83.

Cyanide Baths

Much practical information on the heat treatment of steels with cyanides and salts is contained in a descriptive booklet of E. I. duPont de Nemours & Co., R. & H. Chemicals Dept. The booklet contains many valuable suggestions for improved quality heat treating. Bulletin Sp-29.

X-Rayed Alloy Castings

A folder just issued by Electro Alloys Co. describes their X-Ray inspection service of Thermalloy heat resisting castings for high temperature work. Considerable data on the use of X-Ray tubes and "radon" capsules to check foundry practice are presented. Typical radiographs and tables of physical properties are included. Bulletin Oc-32.

New Nitriding Steel

Electro Metallurgical Sales Corp. offers a bulletin describing a new Electromet chrome vanadium nitriding steel. This new steel develops a case so ductile that at 1000 Brinell no cracks occur at the indentation. The bulletin describes the new steel in complete detail. Bulletin Fb-16.

Aluminum vs. Corrosion

In the carefully prepared booklet, "Combating Chemical Corrosion with Alcoa Aluminum," published by Aluminum Co. of America, effects of various corrosive agents upon aluminum and its alloys are described in detail. It is an excellent and convenient source of information on this subject. Bulletin Sp-54.

Carburizing Boxes

Driver-Harris Co. devotes a folder to a description of Nichrome cast carburizing boxes. Physical properties at room temperature and under operating conditions are given, as is a list of the advantages of Nichrome castings for such service. Bulletin Jr-19.

Atmosphere Furnaces

An interesting folder of Surface Combustion Corp. gives performance data on their atmosphere furnaces compiled from installations in actual production. Operations described include bright annealing of ferrous and non-ferrous metals, carburizing, nitriding, forging without scale and hardening without scale. Illustrated. Bulletin De-51.

Welding Rods

Linde Air Products Co. has published an attractive book which describes in clear, non-technical language the properties, characteristics, and uses of every type of Oxweld welding rod. A fund of reliable general information on welding rods is an important feature of the book. Bulletin Jr-63.

Roll Grinding

Carborundum Co. has just published a 50-page booklet on roll grinding which may be considered a handbook of available information on this subject. Carefully written and amply illustrated, this treatise will undoubtedly be of real practical value. Bulletin Au-57.

Big-End-Up

Gathmann Engineering Co. briefly explains the advantages of steel cast in big-end-up ingots, showing the freedom from pipe, excessive segregation and axial porosity. An 82% ingot-to-bloom yield of sound steel is the usual practice. Bulletin Fe-13.

11 Stainless Steels

Facts on the properties, uses, machinability, workability, heat treatment and finishing of 11 different types of Bethadur and Bethalon corrosion resisting steels are presented in a new 40-page Bethlehem Steel Co. booklet. Data are frank in discussing limitations and advantages of each type. Bulletin Fb-76.

Scleroscopes

The model D standard recording scleroscope is described and illustrated in a recent publication of Shore Instrument Co. The theory and practice of hardness testing with this portable machine as described in this bulletin reveal a fund of valuable facts. Bulletin S-33.

Bright Annealing

A publication of Electric Furnace Co. describes new developments in controlled atmosphere furnaces for continuous deoxidize annealing, bright normalizing and bright annealing both ferrous and non-ferrous metals. Sheets, strip, coils, tubing and wire come clean, bright and dry from these furnaces. Bulletin No-30.

Hardness Testing

Everyone interested in the testing of metals for hardness will do well to have on hand a copy of a catalog recently issued by Wilson Mechanical Instrument Co., illustrating and describing the latest design of Rockwell Hardness Testers and auxiliary work supports. Bulletin Sp-22.

Cast Vanadium Steel

Jerome Strauss and George L. Norris have written a technical booklet for Vanadium Corp. of America describing the properties developed by steel castings containing various percentages of vanadium. The information given is complete and authoritative. Bulletin S-27.

Welding Electrodes

Murex heavy mineral coated electrodes are the subject of a well-conceived booklet prepared by Metal & Thermit Corp. Emphasis is laid on the metallurgical merits of a heavy, all-mineral coating. Many practical hints on welding are included. Bulletin Jr-64.

Heat Treating Machine

A new continuous machine for heat treating in gas atmospheres is described in an Amercan Gas Furnace Co. bulletin. A variety of treatments can be performed in this machine by passing different atmospheres through the muffle. Description of this machine is complete and interesting. Bulletin Jr-11.

Furnace Protector

A new device to protect all types of heating equipment and the charge itself from overheating during operation has been perfected by Hevi-Duty Electric Co. and is described in a recent publication. This novel excess temperature cut-out eliminates need for fuses. Bulletin Jr-44.

New Stainless Booklet

USS chromium and chromium-nickel alloy steels are thoroughly described in a new and very beautiful 48-page booklet offered by American Sheet & Tin Plate Co. and other subsidiary stainless manufacturing companies. Much important information on eight types of stainless is presented. Bulletin Fb-96.

American Society for Metals,
7016 Euclid Ave., Cleveland.

Please have sent to me, without charge or obligation, the following literature as described in the March issue. (Please order by number.)

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Name .....

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Address .....

MEHL TALKS ABOUT ATOMS AND STEEL

Explains to Pittsburgh Why Atomic Structure is Studied

By George P. Halliwell

The February meeting of the Pittsburgh chapter was held at the Keystone Athletic Club. The recent innovation of presenting one of the most recently published books on metallurgy as a door prize to the lucky member present at the dinner had the effect of almost doubling the number of members attending.

Dr. R. F. Mehl, head of the Metals Research Laboratory at Carnegie Institute of Technology, was the speaker of the evening. His subject was "Atoms and Steel."

By means of large space models, Dr. Mehl showed the arrangement of the iron atoms in the unit cells of the body-centered and face-centered lattices. Then by splitting the models and by a slight movement of the relative positions of the atoms, he demonstrated the change in atomic arrangement when steel transformed in the critical range; how the position of the atoms along certain planes facilitated plastic deformation; the mechanism of preferred orientation and the nature of the Widmanstatten structure.

By the use of colored "cork" atoms, the location of the carbon atom between the iron atoms (interstitial arrangement) was readily differentiated from the location of nickel, chromium and other atoms, which replace those of iron (substitution).

Howard Scott of the Westinghouse Research Laboratories led the discussion, which proved to be exceedingly interesting and spirited. A dominant note in the discussion was that a very able presentation was made of a subject which though new to most of the old school of metallurgists was going to be the language of the metallurgists of the future.

DR. ASTON TELLS ROCHESTER ABOUT WROUGHT IRON MAKING

Jan. 8 Program Pleases

By J. M. Keating

The regular monthly meeting of the Rochester chapter was held in a joint meeting with the Superintendents and Factory Managers group of the Industrial Council at the Chamber of Commerce, Jan. 8.

The guest speaker of the evening, through the courtesy of the A. M. Byers Co., was Dr. James Aston of the Carnegie Institute of Technology, whose subject was the manufacture of genuine wrought iron products by the Aston process. The speaker covered the high spots in the ancient process and led up to the Aston practice at A. M. Byers Co.

Five reel moving pictures were shown and the close ups were excellent. Some animated drawings were particularly instructive.

It was an especially good meeting for a non-metallurgical gathering and yet was equally interesting to the chapter members. Dr. Aston's talk, together with the moving pictures, left little for discussion and so a rising vote of thanks was given to the speaker.

PUBLISH ALUMINUM NEWS-LETTER

Aluminum Co. of America is now publishing a monthly Aluminum News-Letter designed to acquaint those interested in business and industry with the most recent developments in the aluminum industry.

Photographs and brief, well-written articles make this news-letter very interesting reading.

"DISEASE OF METALS" IS SUBJECT OF DR. WILLIAMS

Addresses Rhode Island Feb. 7

By Walter M. Saunders, Jr.

Meeting on the common ground of "Corrosion," the Rhode Island chapter of the A. S. M., and the local section of the American Association of Textile Chemists and Colorists, joined forces in listening to Prof. Robert S. Williams, of M. I. T., talk on "Diseases of Metals and their Prevention" at the Feb. 7th meeting of the chapter.

Starting with the pure metals, and including ingot iron and wrought iron, Dr. Williams described the various "diseases" which affect them, going through all the common non-ferrous and ferrous alloys. Wherever heat treatment was required for increased corrosion resistance, he indicated what should be done. Then mechanical coatings, and how they react during corrosion were included as examples of the processes of lead, tin, zinc, nickel and chromium coatings on steel, and pure aluminum on duralumin.

Dr. Williams then answered many questions, which all dealt with some specific application of a metal or alloy in textile work, amplifying his previous remarks wherever necessary. The textile chemists received many valuable pointers in this way, and in addition, the steel men present greatly enjoyed hearing again their friend of several years.

LEHIGH LEARNS ABOUT BRIDGE BUILDING AT FEB. 2 MEETING

Meets with Engineers' Club

By Neil Metcalf

The Lehigh Valley chapter and the Lehigh Valley Engineers' Club held a joint meeting on Feb. 2. L. F. Witmer, representing the A.S.M. and Mr. Heyman of the Engineers' Club were joint chairmen. Charles Carswell, assisting operating engineer of the Port of New York Authority, was the speaker of the evening.

Mr. Carswell outlined the reasons for the erection of various bridges in the New York area and indicated the need for such a body as the Port Authority with the power it possesses.

A very excellent description of the George Washington Bridge followed, covering the initial survey and problems met during construction.

An interesting point about the bridge which may not be commonly known is that it is designed as a two-deck structure. The upper deck is, as at present, for road and pedestrian traffic and the lower, not yet constructed, is for four lines of rail traffic.

HEAR WROUGHT IRON TALK

St. Louis Members Enjoy H. F. Estill's Talk and Pictures on June 19

By C. M. Stevenson

The St. Louis chapter held its regular monthly meeting on Jan. 19, and we had a very successful meeting.

H. F. Estill, division manager of the A. M. Byers Co., presented as his subject "New Story of Ancient Wrought Iron" and illustrated the same with a five-reel motion picture, which was very well received. In addition a two-reel subject from the Bureau of Mines, United States Department of Commerce, entitled "The Metals of a Motor Car" was presented.

MARSHALL G. SPENCER DIED JAN. 24

Marshall G. Spencer, vice-president and general manager of Electric Steel Castings Co., Indianapolis, and a member of the Indianapolis chapter of the Society, died at his home on Jan. 24 after many years of work in the foundry industry.

NORTHWEST REPORTS 3 GOOD MEETINGS

Welding, Austenite and Iron's History are Program Topics

By Thomas P. Hughes

Three meetings have been held by the Northwest chapter since the last report appeared in the REVIEW. The first of these was addressed by Stuart Plumley, chief engineer of the Commercial Gas Co. of Minneapolis, who spoke on welding. Mr. Plumley, being more familiar with the oxy-acetylene process devoted the major part of his address to the discussion of this method. Particular emphasis was laid on the selection of rods of the desirable analysis for the service required. This may be done because welding rods marketed by reliable manufacturers conform strictly to specifications laid down by the A. W. S. A very enjoyable evening was spent with Mr. Plumley.

The second meeting was addressed by Arvid Nielsen who reviewed his recent graduate research on the "Transformation of Austenite." Mr. Nielsen produced pictures of the actual formation of primary martensitic needles from the austenite grains.

This is a most unusual film and other chapters should arrange to show it to their members.

Steels with 1.7% carbon were used by Mr. Nielsen. He heated them to various high temperatures and quenched them in a hot medium to retain the original austenite grains. The specimens were polished and etched at a temperature at which the austenite was stable. After setting up, the specimen was then allowed to cool and photographs were taken as the austenite broke down.

This study was conducted under the direction of Dr. Ralph Dowdell in the University of Minnesota School of Mines.

Our last meeting was given over to a review of the story of iron and steel, ancient and modern. This subject was interestingly handled by Mr. Wade, chief of the inspection department of the U. S. Steel plant at Duluth. The making and uses of iron by our primitive ancestors and the gradual development of the steel making processes of today were traced by the speaker. The discovery of the art of making iron was "the most portentous discovery in the history of human industry" and it is difficult to conceive of any but the most primitive existence for us "moderns" were the iron alloys taken out of circulation.

KORP AND PARKER TALK TO YORKMEN

Korp Talks on Hardening; Parker on Pyrometry

By F. J. Allen and G. J. O'Neill

If there can be anything better than a meeting with Jordan Korp the York chapter feel that it must be a meeting with Jordan Korp and his gang. Expectations ran high in anticipation of Mr. Korp's visit in January and further pleasure was felt when he arrived with his colleague, C. H. Parker.

After Chairman William F. Allen opened the meeting, Floyd Whalen, chairman of the lecture committee, welcomed Mr. Korp. Then followed an address on "Correct Hardening Procedure" in its substance and delivery in the characteristic Korp manner.

[Mr. Korp's deservedly popular talk has been reported a number of times in previous issues of the REVIEW, and hence will not be abstracted here at this time.—EDITOR.]

After Mr. Korp's address and its discussion, Mr. Parker took over the meeting. His talk on pyrometry was very much to the point. First he outlined the theoretical basis for the measurement of high temperatures, and then proceeded to describe the development and application of the various types of pyrometers. The evolution of the indicator to the recorder and then to the controller type was shown.

After his talk Mr. Parker discussed the cell arrangements and cell life in the potentiometer circuit with Mr. Whalen. In response to James Morrison, he detailed a method for annealing the platinum wire in one type of thermo-couple. Questioned by Mr. Wigfield, the speaker said that there was in use a set-up of optical pyrometers to record the bath temperatures of the open hearth furnace. The results obtained in this way were relatively accurate.

Even formal adjournment of the meeting did not end matters. One huddle formed around Mr. Korp and the blackboard, while in another corner Mr. Parker had his group of questioners.

WASHINGTON STUDIES LOCAL STEEL CASTING TECHNIQUE

J. E. Crown Speaks on Jan. 17

By William H. Swanger

On Jan. 17 the Washington chapter enjoyed the unusual privilege of hearing a discussion by one of its own members of a metallurgical manufacturing process carried on in Washington. J. E. Crown, master mechanic, foundries, U. S. Naval Gun Factory, addressed one of the best attended meetings of the season on "Quality Steel Castings."

Mr. Crown discussed in detail the successive steps in the preparation of high quality steel castings.

He emphasized the need of sympathetic cooperation between designer and foundryman; the wide variety in molding sands and the rapid developments in recent years in methods for the scientific control of the character of sands; and the importance of adequate heat treatment of the castings.

The discussion following Mr. Crown's address developed into a lively and good-natured presentation of the case of steel castings versus welded fabrication.

LETTER OF CORRECTION FROM R. A. BULL

Editor, The REVIEW,
American Society for Metals,
Cleveland.

In your January, 1934, issue the account of the December meeting of the New Jersey chapter contains an inaccuracy which, if not corrected, would place me in a peculiar light as a ferrous metal technologist.

I am quoted as having stated in my talk before the New Jersey chapter that I usually consider "a composition of an alloy having more than 0.50% carbon as cast iron and a composition having from 0.18-0.45% carbon as a cast steel."

The references to the identifying chemical compositions of cast iron and cast steel were made in the discussion participated in by several persons, following my talk. Probably the exchange of opinions on the subject, made by persons from the floor, was responsible for the mistaken impression as to what I said.

I did not advocate any carbon content to distinguish between cast iron and cast steel. I made no statement indicating directly or indirectly that 0.50% carbon represents a good dividing line. Of course there are numerous grades of cast steel which contain higher percentages of carbon than 0.50%; a few grades, for special purposes, carrying much higher proportions. I said that most of the cast steel produced in the United States comes within the carbon range from 0.18 to 0.45%.

Yours very truly,
R. A. BULL.

GAS WELDING PROGRAM DRAWS 200 TO NOTRE DAME MEETING

Movies and Talks Featured

By William F. Lewis

The meeting on Jan. 11 of the Notre Dame group can be credited with having the best attendance this season. There were over 200 present, including guests and members from both in and out of town. The Linde Air Products Co. was the capable sponsor of the meeting.

The subject "Oxy-acetylene Welding" was discussed, bringing out the fundamentals of welding and of welding equipment. The demonstration was under the direction of J. I. Barash of the Linde Co., and was in the nature of a symposium.

This demonstration included the welding of steel, cast iron and aluminum, the cutting of steel by gas, hard-surfacing with Stellite and the welding of six-inch pipe. These phases of the subject were discussed by several speakers from firms allied with the Linde Co. The various applications of the welding and cutting operations were shown in moving pictures and were accompanied by a complete explanation of each.

The meeting was concluded with a very interesting demonstration of the properties of liquid oxygen.

ST. LOUIS HEARS PARMITER

Chapter Holds Successful Session on Corrosion Resisting Steel in March

By C. M. Stevenson

The St. Louis chapter held their regular monthly meeting on March 16, and we are very glad to say that we had a very successful meeting.

The speaker of the evening was Owen K. Parmiter, metallurgical engineer of the Firth-Sterling Steel Co. Mr. Parmiter chose as his subject: "Types of Corrosion-Resistant Steel" which was indeed very interesting and well received by all present.

The chapter was very glad and pleasantly surprised when W. H. Eisenman, our national secretary, appeared at the meeting. Of course, Mr. Eisenman did not need any introduction and his humorous stories and his talk on the Society was well received.

"AIRCO" NOW OWNS WILSON WELDER

Air Reduction Co., Inc., has exercised its option on the balance of the capital stock of the Wilson Welder and Metals Co., North Bergen, N. J. Air Reduction thus becomes the first of the oxy-acetylene welding companies to own a 100% interest in an electric welding organization.

TELLS OF RECENT WORK ON COPPERS

New Jersey Hears Crampton at Meeting on Feb. 14th

By Ernest O. Olds

At the Feb. 14 meeting of New Jersey chapter chairman Frazer welcomed our guest speaker, Dr. D. K. Crampton, director of research of the Chase Brass and Copper Co., who had for his subject "Some Recent Developments in Copper and Copper Alloys."

Four distinct types of oxygen-free, high conductivity coppers are now available commercially. These types are produced (1) by melting under controlled reducing atmospheres, (2) by sintering cathode copper under controlled atmospheres, (3) by the use of deoxidizers and (4) by the use of low content of phosphorus as a deoxidizer.

Research has shown that lithium and lithium alloys are not only very efficient deoxidizers but are refining agents as well. In the fourth class, using low amounts of phosphorus to aid in eliminating oxygen, there usually remains as a residual about 0.02% phosphorus.

We were told that the rate of penetration of embrittlement was the least and the ability to cold work was greater in those oxygen-free, high conductivity coppers and the deoxidized coppers. The 3% silicon-copper alloys in the worked condition developed a tensile strength of 135,000 lb., with an elongation of 18%. Beryllium-copper alloys containing about 1.25% beryllium when heat-treated and aged, developed a tensile strength of about 210,000 and possessed increased electrical conductivity and resiliency.

Following this very interesting talk some twenty members participated in a lengthy discussion. In reply to questions on deoxidizers, Dr. Crampton told that his procedure of deoxidizing was to add the deoxidant immediately before pouring. The addition was accompanied with vigorous stirring.

BOSTONIANS VISIT PLANT, HEAR TALKS

With A. W. S. Men Hear T. S. Fuller and L. R. Leveen

By Howard E. Handy

A joint meeting of the Boston section of the American Welding Society and the Boston chapter of the American Society for Metals was held at the River Works of the General Electric Co., West Lynn, on February 2.

Groups were conducted through the various departments of the plant, including the forge shop, heat treat, laboratory, arc-welding, punch-press, turbine, small motors, etc. Later a recreation period was enjoyed in the Auditorium Building where educational movies were shown to those interested. More than 175 members and guests of the two societies were present at the dinner served at 6:00 P. M.

T. S. Fuller, research department, General Electric Co., Schenectady, presented a talk entitled "The Development of Tool Materials." He described the heat treatment and hardness of the iron-tungsten, iron-molybdenum, iron-cobalt and iron-tungsten-cobalt systems and discussed in particular the latest developments of the General Electric Co. of this type of cutting material.

The final talk of the evening was given by Lawrence R. Leveen, welding engineering department, General Electric Co., Schenectady, whose illustrated talk on "Trends and Practices" was in connection with the use of heavily coated electrodes in arc-welding.

SCHENECTADY HEARS BAIN ON ACTION OF CARBON TOOL STEELS

Members Discuss Talk at Length

By L. L. Lyman

The January meeting of the Schenectady chapter was held on Jan. 16 when the members were treated to a very excellent talk by E. C. Bain of the U. S. Steel Research Laboratory.

Mr. Bain brought forth many new points of interest concerning the behavior of carbon steels, emphasizing that some of the newer heat treatments produce quite surprising properties in these materials.

Grain size, and the influence of added alloying elements on this grain size, are of fundamental consideration in the endeavor to obtain maximum properties.

A very lively discussion of the many new bits of information which Mr. Bain so very ably presented kept the speaker quite busy answering questions.

Employment Service Bureau

Address answers care of A. S. M., 7016 Euclid Ave., Cleveland, unless otherwise stated.

YOUNG METALLURGIST and chemist with considerable heat treating and production experience. Desires opening. Highly recommended. Box 3-5.

CHEMICAL ENGINEER AND METALLURGIST: Twenty years experience in ferrous and non-ferrous industries. Plant design, control and operation. Chemical and physical testing, research investigations. Interested in sales engineering and metallurgical production. Box 3-10.

PRODUCTION METALLURGIST: Experience includes work as analytical chemist and as metallographist and research metallurgist for automotive parts makers. Box 3-15.

METALLURGIST: Exceptionally wide experience both in steel mills and in manufacturing plants. Now employed as chief chemist and metallurgist for large automotive plant. Box 3-20.

YOUNG MAN with experience on acid and basic O.H. furnaces and in all departments including finishing of various products wants opportunity to work into sales department of reliable company. Well recommended. Box 3-25.

RESEARCH METALLURGIST wants position in investigation work. Familiar with X-ray and radiographic procedure. Ferrous and non-ferrous experience. Box 3-30.

METALLURGIST: Graduate of Case School with good record in 1930. Continuously employed. Experience in iron and steel, physical testing, foundry, metallography and non-ferrous alloy development. Box 3-35.

SALES REPRESENTATIVE: Wide acquaintance with engineers and metallurgists in middle west. Would like to be representative for some manufacturer not competing with his present line. Has had steel mill, fabrication and heat treating experience as well as years of successful selling. Box 3-40.

METALLURGIST: Steel mill experience and seven years with motor car manufacturer as metallurgist in transmission plant and in charge of heat treating of tool and die steels. Prefers production work but would consider sales metallurgist position. Box 3-45.

YOUNG METALLURGIST: Knows analysis, inspection and testing of steel, ferro-alloys, ores, etc. Now with large automotive concern. Wants to go with small, progressive company, preferably in the melting shop, where opportunities are good. Box 3-50.

C. R. AUSTIN TALKS TO ONTARIO'S MEN

Tells Effect of Normalizing Certain Manganese Steels

By John W. McBean

At Ontario chapter's February meeting in Toronto, we had the pleasure of a coffee talk by one of our former chairmen, Colin C. Rous, on "The Sword," which included some humorous descriptions of the fearful and wonderful methods of heat treatment supposed to have been used, according to mythology.

The technical paper was given by Dr. C. R. Austin of the Westinghouse Research Laboratories.

The major topic of his address was a discussion of the effect of normalizing medium manganese steels which are intended to have a high strength and moderate toughness for use as rails, tubing, etc.

Some of the steels experimented on contained approximately 0.4% carbon, 1.6% manganese, and low sulphur and phosphorus. In the hot rolled state the grain was coarse, the impact resistance rather low, and a banded structure often showed which was not entirely eliminated by a single normalizing treatment.

A double normalizing was tried: First 30 minutes at 775 or 800° C., followed by 30 minutes at 750° C.

This eliminated the banded structure, gave a finer grain and markedly improved the impact, tensile and endurance properties. In some cases the Izod figure was increased to two or even four times the original figure.

The profound influence of slight increases in manganese and carbon content on metallographic features (segregation, etc.) and on physical properties was then discussed, showing the need for carefully studying the analysis before adopting for some particular service.

H. J. STAGG DISCUSSES HIGH SPEED STEELS AT BOSTON

Chapter's Course is Popular

By Howard E. Handy

The March meeting of the Boston chapter was held at Massachusetts Institute of Technology, Cambridge, on March 2. The guest speaker was Howard J. Stagg, assistant manager of the Halcomb Steel Co., Syracuse. He presented a practical talk on "High Speed Steel." Some very valuable illustrated data was given on the heat treatment and properties of the various types of high speed steel. A long and interesting discussion followed.

Dinner was served in Walker Memorial to about 75 members and guests. The usual coffee-talk was presented this month by Dr. H. H. Lester, physicist at the Watertown Arsenal and a member of the chapter executive committee. Dr. Lester described some of the heat treatments which have been performed at the Arsenal to refine steels which refused to respond to ordinary treatments.

Dr. J. P. Walsted, director of education of the Boston chapter, gave a report on the Educational Course being conducted by the chapter. Seven weekly meetings have been held with an average attendance exceeding one hundred. Lectures covering production metallurgy of iron and steel, and physical metallurgy have been completed. The balance of the course will have to do with X-Ray metallurgy, aluminum alloys and physical testing.

CHAPTER STORY CORRECTED

An error appeared in the report of John R. Freeman, Jr.'s talk before the Cincinnati chapter which was printed in the January REVIEW.

The fourth question of the report should have read "Are beryllium copper alloys used for gears?" The proper answer, as made by Mr. Freeman, was, "For large gears the cost at the present time would probably be too great. Bronze and brass gears are widely used in industry for heavy duty as in automobile differentials, as well as for light service."

CLEVELAND HOLDS "NATIONAL OFFICERS' NIGHT" FEB. 12

Archer Gives Technical Talk

By H. B. Pulsifer

"National Officers' Night" was celebrated by the Cleveland chapter on Feb. 12 when President Phillips and Secretary Eisenman brought messages to the chapter. Other past national officers who were guests of honor were W. S. Bidle, J. V. Emmons and Zay Jeffries.

Bob Archer came over from Milwaukee to give the address of the evening. His subject was "Gases in Steel" which topic he developed historically and then intensively as clarified by the light of the most recent researches. From the desirable function of slag in wrought iron promoting weldability, the speaker progressed to the more recent conceptions of the fine oxide suspensions that are supposed to restrain grain growth in the steels for heat-treating and carburizing.

The fundamental chemical work of determining the oxygen in steels present as compounded with metals of different reducibility was expounded in some detail. Mr. Archer cast some doubt on the absorption of oxygen during carburizing and inclined to the opinion that high oxygen steels lost, and low oxygen steels gained oxygen during the process. However, he left no doubt that he considered the very fine dispersion of oxides to be responsible for some of the most desirable properties of present-day steels.

The meeting proved to be one of great interest to the local membership for almost 160 came out to the dinner and some 300 were present for the address.

TRI-CITY MEMBERS IN MIDST OF VERY SUCCESSFUL SEASON

Attendance Steadily Increasing

By Wayne L. Cockrell

The Tri-City chapter has been having increasing attendance at every meeting this year; though our addition in membership has not been very great, the increase in interest has been substantial.

At our November meeting we had sixteen at the dinner and about half a dozen came in afterwards. Our last meeting, held March 6, in which the subject of welding was discussed by G. F. Clipsham, of the Lincoln Electric Co., we had 34 at the dinner and 18 or 20 came in afterwards.

Mr. Clipsham described the shielded arc method of electric welding and compared it with the use of the lightly coated rod. The principal advantage of this method of welding is that it protects the metal dropping from the rod from oxidation and producing much cleaner and stronger welding, a weld which is comparable in properties with the base material. Mr. Clipsham also discussed the use of carbon arc welding of rolled or lapped seams and light joints.

The talk was illustrated by slides showing the micro-structure of various welds, the results of tensile tests and schematic drawings of the several methods of welding which were discussed. Mr. Clipsham's formal talk was followed by considerable discussion.

WORCESTER'S WIRE MEETING

L. H. Winkler Talks on Jan. 18

By R. R. Tatnall

On Jan. 18 the annual Wire Meeting of Worcester chapter was held. Sixty members and guests met for dinner, and about 150 gathered to hear Louis H. Winkler of Bethlehem Steel Co., who spoke on "Wire Rod Fabrication."

Mr. Winkler's talk gave in a non-technical manner the details of steel making and rolling mill practice in the manufacture of rods for further processing into wire. He described the difficulties met and the methods of control of temperatures, analysis, and physical properties throughout the process, to result in high quality steel.

Among those in attendance was John Mordica, president of the Wire Association. William A. Bennett presided as technical chairman.

DETROITERS STUDY FAILURES, COPPER

Knowlton and Wachsmuth Give Talks at February Meeting

By Scott C. Taylor

A most interesting paper was presented by H. B. Knowlton of International Harvester Co. on "Failures" at Detroit chapter's February meeting.

As his major premise the speaker quoted a statement from Jeffries & Archer that we have to explain why steel is weak, not why it is strong. The true strength of steel is probably several million pounds per square inch. Lower figures mean that the entire cross-section of the specimen did not fail simultaneously. All failures originate locally and spread progressively.

To avoid failures it is necessary to determine the cause of the start of rupture. This is due to local weakness or to concentration of stress. The effect of design in causing concentration of stress is well known.

The correlation of physical tests with service requirements was illustrated by a chart showing not only the usual tensile properties, but the results of notched bar and tensile impact, various types of repeated impact, and fatigue tests, for the same type of steel at varying degrees of hardness. It was brought out that no mathematical merit index of universal applicability is possible. It was shown that shock did not produce, but might aggravate a concentration of stress. The properties of different alloy steels at the same degree of hardness were also discussed.

Non-Ferrous Meeting

The second non-ferrous meeting was attended by about 60 members who heard Dr. Wachsmuth of the Baltimore Rolling Mills Co. on "Production of Copper." He covered this process from the mines to the finished products in its several forms. Four reels of moving pictures were also shown.

SPALDING TELLS JERSEYMEN HOW TO BUY TOOL STEEL

Chapter Enjoys January Meeting

By Ernest O. Olds

About 150 members and their friends attended the 46th regular monthly meeting of the New Jersey chapter in Newark, on Jan. 8.

Chairman Frazer opened the meeting with a formal presentation of a beautiful watch fob, on behalf of the National Society headquarters, to our own Harry McKinney. Every member of our chapter was as much pleased with this expression of appreciation for all of Mr. McKinney's services to the Society.

The principal speaker of the evening was S. C. Spaulding, metallurgist for the American Brass Co. His subject, "How to Buy Tool Steel," was very ably delivered and eagerly received.

All orders carry definite specifications to meet a certain requirement. Upon receipt of the material, it is checked to determine its fitness for the proposed job, by a set of tests. These tests are: Macroetch, for uniformity of structure; hardenability, for grain refinement and inherent defects; hardness, either Brinell or Rockwell; microscopical examination; chemical analysis.

A lengthy discussion followed the address, in which many participated, including J. A. Wyzalek, Mr. Cronkright, J. B. Mudge, Mr. Charron and our chairman, Mr. Frazer. In his reply, Mr. Spalding told us that their specifications permitted the steel companies to supply direct from their warehouse stock.

SCREW STOCK MACHINABILITY IS ROCKFORD MEETING TOPIC

Goldcamp is January Speaker

By Freeman G. Anderson

C. F. Goldcamp from Jones and Laughlin Steel Corp. presented a paper on "The Development of Machinability in Screw Stock" at Rockford chapter's meeting on Jan. 19.

The paper covered the development of machinability in screw steel from the inception of the grade in the present century up to the present time.

Improvements in steel making for closer uniformity, efforts for better chemical and physical control, experiments with various analyses, elaborate programs for testing and present-day research were covered in detail.

In the general discussion which followed the reading of the paper the inherited property "sensitivity" as related to machinability was the main topic. This property, being comparatively new to most of the audience, brought forth many questions and considerable interesting information.

SIR ARTHUR BALFOUR AND F. B. FOLEY TALK TO ONTARIO MEN

"S. R. O." Sign Needed in March

By John W. McBean

At the March meeting of the Ontario chapter in Hamilton the attendance more than taxed the cacpacity of the room in spite of bad weather. Francis B. Foley, superintendent of research for the Midvale Co., gave the technical paper.

His subject, "Hardening," was treated by taking up various theories of hardening including the precipitation hardening as illustrated by aluminum and the slip interference theory of Jeffries and Archer. Application was then made of the theories to special steels.

After the paper we were fortunate in hearing an informal talk by Sir Arthur Balfour, who gave us an interesting picture of the improving industrial situation in Great Britain, and some interesting ideas on economic and social questions and on the world political outlook.

Among other things he pointed out that under modern conditions in the applications of science to industry there is an inevitable displacement of workers when new demands replace old ones. In that connection he expressed the opinion that a system of compulsory insurance to which the government, the employer and the worker all contribute is an essential measure of justice, which bridges the gap during such changes.

GILL SPEAKS ON STAINLESS AT WORCESTER'S MEETING

Talk Creates Much Discussion

By R. R. Tatnall

The February meeting of the Worcester chapter was held on the 14th, with J. P. Gill, Vanadium-Alloys Steel Co., speaking on "Stainless Steels." Mr. Gill, in his paper, showed the analysis, physical properties and principal uses of the rust resisting steels used today.

With this background the meeting was thrown open for discussion. The theory of passivity and the proof of the existence of very thin surface films were discussed. An interesting point is that this material shows some effects of cold-working, even though it be worked at temperatures as high as 1800° F.

Further discussion brought out the fact that intergranular corrosion was closely related to precipitation, which occurs along the grain boundaries. With this precipitation, the neighboring metal was weakened in its resistance to corrosion, and hence showed failure at or very near the grain boundaries, this failure being corrosion resulting in a brittle metal.

RHODE ISLANDERS IN JOINT MEETING WITH A.S.M.E. MEN

Gill and Rose Talk Alloy Steels

For the January meeting, the Rhode Island chapter joined the Providence section of the A.S.M.E., and were addressed by James P. Gill, and Robert S. Rose, Vanadium-Alloys Steel Co., who took as their subject, "The Selection and Application of Alloy Steels."

Mr. Gill gave a splendid resume of the effects of the many elements present in steel, taking each one separately, and then in combination, where such a possibility exists.

Mr. Rose presented an excellent summary of the transformations which take place in plain carbon and alloy steels, when quenched.

Possibly some of the mechanical engineers present found themselves in foreign territory at times during the evening. They were introduced to our old friends "austenite, troostite and pearlite," but due to the splendid guidance of our speakers, soon felt quite at home with them. From the viewpoint of both societies, the subject and presentations were a success.

ORGANIZE STEEL TREATING PLANT

Geo. H. Grundy and Charles A. Lampard, formerly connected with the Poldi Steel Corp. of America, New York, have organized a commercial heat treating plant, located at Stratford, Conn., under firm name of Grundy & Lampard. Complete modern equipment for heat treatment of metals has been installed.

ALLOYS FOUNDRY BUYS X-RAY UNIT

Electro-Alloys Co., Elyria, O., has completed the installation of a new 200,000-volt X-Ray unit. Thermalloy castings are now inspected by X-Rays at no additional charge to the customer. A second inspection unit is planned.

MATERIAL TESTING IS PITT'S TOPIC

J. R. Townsend Gives very Interesting Talk in January

By George P. Halliwell

At the January meeting of the Pittsburgh chapter, J. R. Townsend, engineer in charge of tests at the Bell Telephone Research Laboratories, gave a very interesting and enlightening talk on the testing of materials, and metals in particular, used in telephone, cable, and radio engineering.

Mr. Townsend showed that the wide variety of metals and alloys used and the multiplicity of applications make it necessary to use not only the very best and latest of testing equipment, but also to build special equipment for specific tests which would obtain data on the metals under service conditions.

X-Ray and Gamma rays are used to a considerable extent by the Bell Telephone Laboratories. In the case of X-rays, flaws are detected regularly to a depth of 4 inches.

One of the most interesting and remarkable pieces of testing equipment described by Mr. Townsend was a very elaborate device for testing parallel surfaces of two very thin cold rolled duralumin discs used in the radio transmitter.

The meeting was then opened for discussion with R. L. Templin, of the Aluminum Co. of America, acting as chairman. When testing engineers gather, it is natural to expect that questions will come in for considerable discussion which deal with the determination of the true Proportional Limit, the evaluation of accelerated corrosion and fatigue tests, the effect of inclusions in steel or the value of the various types of bend tests. In this respect the Pittsburgh chapter ran true to form.

NOTRE DAME STUDIES BRASS

C. O. Thieme, on Feb. 15, Tells About High Strength Brasses and Bronzes

By William A. Lewis

At a meeting on Feb. 15, the members and guests of the Notre Dame group heard an interesting talk by Carl O. Thieme, chief metallurgist for H. Kramer Co., Chicago. He discussed the composition, properties and methods of manufacture, and the treatment of the brasses and bronzes, with special emphasis upon uses calling for exceptionally high strength and hardness.

Mr. Thieme showed the variation of tensile strength and elongation with composition by means of curves which proved to be very instructive. The many uses of the various alloys ranged from the non-sparking tools for explosive works to the strong yet lighter-than-steel aluminum alloys for airplanes.

Mr. Thieme concluded his address with a discussion of the new and interesting beryllium-copper alloys.

BIG MEETING AT ST. LOUIS

Jordan Korp's Talk on Tool Hardening Pleases Year's Second Largest Crowd

By C. M. Stevenson

The St. Louis chapter held a regular monthly meeting Feb. 16th, and we are very glad to say that we had the second largest meeting this chapter has enjoyed during the past year.

The speaker of the evening was Mr. Jordan Korp, metallurgical engineer of Leeds & Northrup Co. Mr. Korp chose as his subject: "Hardening of Tools," which was indeed very interesting and well received by all present.

ANNOUNCE SMALL MELTING FURNACE

A new rocking electric furnace, of 25 to 100 lb. capacity, has been announced by Detroit Electric Furnace Co., Detroit. The unit has been designed for either production or experimental melting of small lot runs of metals, such as iron, alloy steel, copper, brass, nickel, aluminum or precious metals.

Except for size, the furnace is a faithful reproduction of the larger rocking electric furnaces and, according to the manufacturer, will provide the speed, economy, and analysis control for which these furnaces are known.

BOOK ON DARDELET THREADS

Dardelet Threadlock Corp., New York, has just issued a 220-page leather-bound handbook which presents in convenient form complete information on the Dardelet thread.

Included are a discussion of the theory of the thread, its standardization, manufacture and application as well as general data on threaded fastenings and a number of useful tables.

Copies may be obtained from the corporation, address 120 Broadway, New York City. Price $2.00.

MONTREAL ARRANGES ANOTHER BIG NIGHT

Honor Sustainers; Hear About Fair, Testing and X-Rays

By Gordon Sproule

On Feb. 5 Montreal chapter had another big night, proof of the organizing ability of Chairman J. K. Schofield.

It was Sustaining Members' Night and representatives of our 18 Sustaining Members were guests of the chapter at a special dinner. With red carnations in their lapels, these gentlemen were conspicuous among a total of 59 diners. At least 150 were present for the lecture. Immediately after the dinner Harold J. Roast, technical director of Canadian Bronze Co., gave "Impressions of the Century of Progress Exhibition." Mr. Roast's descriptive remarks were appropriately followed by an excellent amateur movie film of the Fair, taken by E. A. Rawlings.

Next there was a short description and demonstration by A. J. Ames and E. Jas. Low, of Instruments, Ltd., of the "Tensometer," a miniature (portable) but strictly high grade, precision, tensile testing machine. Using tiny test pieces this renders all the functions of a regular tensile test, including a semi-autographic record; also Brinell test and notch-bend test.

Finally, but not too late, there came the lecture of the month, "Industrial Application of the X-ray," by E. W. Page of General Electric X-Ray Corp. As Mr. Page was unavoidably detained in Chicago, the paper was presented by H. T. Hamon of Victor X-ray Corp., Montreal, who showed thorough familiarity with the subject.

[Editor's Note: Since most of the material in Mr. Page's very interesting paper has been previously reported in the REVIEW, it will not be printed here at this time.]

By way of discussion Gordon Sproule showed a few slides made in the Department of Metallurgy at McGill University. These gave "local colour" and independent corroboration of many of Mr. Hamon's points. Perhaps the most interesting showed the differentiation of cut glass and rock crystal (quartz), and other clear stones.

BOSTON HEARS E. C. SMITH TALK ON STAINLESS STEEL

Long Discussion Period Follows

By Howard E. Handy

The January meeting of the Boston chapter was held at Massachusetts Institute of Technology, Cambridge, on Jan. 5. The guest speaker was Earl C. Smith, chief metallurgist, Republic Steel Corp., his subject being, "Stainless Steels."

Mr. Smith gave a very interesting talk on the development and uses of the various types of stainless irons and steels and had with him a great variety of finished parts manufactured from this type of materials. A very lengthy discussion followed his presentation after which the members spent considerable time looking over the exhibits. About 150 were in attendance.

Prior to the meeting, a dinner was held at Walker Memorial, there being about 85 in attendance. The chapter was honored at dinner by the presence of its Honorary Member, Professor Albert Sauveur of Harvard University.

BUNDY TUBING FORMS SUBSIDIARY

Bundy Tubing Co., Detroit, manufacturers of hydrogen-welded steel tubing, announce the organization of a subsidiary company known as H. W. Bundy, Inc. The new company will take over the commercial parts copper-hydrogen-electric-welding production of the parent company other than tubing.

General offices will be maintained in the plant of the Bundy Tubing Co. at 10951 Hern Ave. Manufacturing will be done at the former Bundy plant, 4815 Bellevue Ave., where the company's large "Zeppelin" type hydrogen-welding furnace is located.

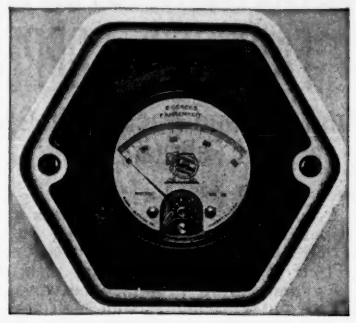
LUKENWELD PROMOTES CHAPMAN

Everett Chapman, who joined Lukenweld, Inc., division of Lukens Steel Co., Coatesville, Pa., early in 1930 as director of engineering and research, has been elected vice-president.

F. G. DAVIS WITH PENINSULAR STEEL

Frank G. Davis, member of the Detroit chapter, has been appointed general sales manager of Peninsular Steel Co., Detroit. He will have offices at 1030 McDougall Ave.

Low Cost Pyrometer



Russell Electric Co., Chicago, has perfected a reliable but very inexpensive pyrometer designed and priced for factory installation on industrial furnaces.

These "Hold-Heet" pyrometers will enable furnace builders to install as standard equipment, and at almost negligible cost, an accurate instrument for measuring furnace or oven temperature.

"Hold-Heet" pyrometers are made in two sizes, both using a low-resistance principle of operation which permits accurate heat measurements. One operates up to 800° F., and the other up to 1600° F. The instruments are direct reading.

Further information on these pyrometer can be obtained from the manufacurer, Russell Electric Co., 359 W. Huron St., Chicago.

CORROSION FATIGUE STUDIED BY LEHIGH

W. E. Harvey Interests 75 at Meeting in March

By Neil Metcalf

The Lehigh Valley chapter held its March meeting as a joint affair with the A.I.M.E. and the Lehigh University Metallurgical Society. Some 75 members of the three societies were present.

Joint chairmen were Professor Witmer, representing the A.S.M., Prof. Fay for the A.I.M.E. and Mr. Howers for the University.

After a few preliminary remarks by these gentlemen, the speaker of the evening, Wilbur E. Harvey of J. A. Roebling & Son, Trenton, was introduced. His subject was "Corrosion Fatigue."

Mr. Harvey showed graphs which indicated that in the case of steels, irrespective of heat treatment (exclusive of the stainless group) their corrosion fatigue limit had much the same value, 12,000-20,000 lb. per sq. in., which bears little or no relationship to the ordinary fatigue limit. In sections from ½" to 2" the effect of mass produces no difference, the corrosion fatigue limit is the same.

It was postulated that the mechanism of corrosion fatigue was as follows. Corrosion forms pits and cracks in the materials; then stress localizing at the bases of such pits and cracks becomes greater than the remaining sound section can carry, i.e., higher than the ordinary fatigue limit and hence failure.

A lively discussion followed the conclusion of the paper.

INCREASES MELTING CAPACITY

Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich., has added to their furnace capacity a fourth Lectromelt furnace for duplexing cupola iron for crank and cam shafts. The furnace was built by Pittsburgh Lectromelt Furnace Corp.

R. B. TILLMAN, TOLEDO, IS DEAD

Robert B. Tillman, metallurgist for Industrial Steel Casting Co., Toledo, died recently after a brief illness. Mr. Tillman had been active in the A.S.M., having served as secretary of the Toledo group of the Detroit chapter.

ORGANIZE VASCOLOY-RAMET CORP.

Vascoloy-Ramet Corp. has been organized to manufacture and sell all grades of tantalum carbide and to produce all varieties of tantalum carbide cutting tools, dies, wearing surfaces, and similar products. It consolidates the resources of the tantalum carbide manufacturing divisions of Vanadium-Alloys Steel Co., the Fansteel Products Co., and the Ramet Corp. of America.

C. O. Anderson, formerly with Leeds & Northrup Co., and more recently with the Claud S. Gordon Co. of Chicago, has recently been elected vice-president and appointed general manager of Pyrometer Service & Supply Corp., 1988 E. 66th St., Cleveland, a subsidiary of Claud S. Gordon Co.

MOCHEL TELLS OF FORGINGS HE'S MET

Philadelphia Likes His Way of Showing Forging Practice

By Adolph O. Schaefer

About 250 members and guests crowded Philadelphia's fifth meeting of the season to hear Norman L. Mochel, metallurgical engineer of Westinghouse Electric & Manufacturing Co., talk on "Forgings."

After considering the economics of the method, and the reasons why the metallurgical engineer specifies forgings for certain parts, the speaker passed to the major portion of his talk. Choosing the example method of presenting the subject, he entitled this part, "Forgings I Have Known."

This proved to be an excellent method of holding the interest of the audience, as forgings of all sizes and shapes were shown, ranging from one the size of a pea, to those made from 400,000-pound ingots. Applications of the forgings were shown, as well as the forgings themselves, some of which had been sectioned and etched to show the arrangement of the flow lines.

Following the talk, a lively discussion began that was only called to a halt after Philadelphia's 10:30 time limit had been passed. The members present were interested in flow lines, some questioning their importance.

The speaker had not favored liquid quenching of masses of steel of large cross section. This view was challenged by some, notably by Horace C. Knerr. Apparently European and American practice differ on this point.

W. K. LEACH WITH AMSCO

W. K. Leach, formerly with General Alloys Co., Boston, is now associated with the American Manganese Steel Co. as general manager of the Alloy Division. Mr. Leach is located at the plant at 6600 Ridge Avenue, St. Louis.

Addresses of Chapter Secretaries

Baltimore
S. Proctor Rodgers, Industrial Fuel Dept., Consolidated Gas, Electric Light & Power Co., Baltimore, Md.

Boston
Howard E. Handy, Saco-Lowell Shops, Biddeford, Me.

Buffalo
F. L. Weaver, American Radiator Co., Bond Plant, Buffalo, N. Y.

Canton-Massillon
H. J. Deal, 147 Roslyn Ave., N. W., Canton, O.

Chicago
John A. Comstock, 5633 No. Kenmore Ave., Chicago.

Cincinnati
N. C. Strohmenger, Tool Steel Gear & Pinion Co., Cincinnati.

Cleveland
H. B. Pulsifer, Ferry Cap & Set Screw Co., Scranton Rd., Cleveland.

Columbus
L. H. Marshall, 3629 Weston Place, Columbus, O.

Dayton
Fred M. Reiter, Dayton Power & Light Co., Dayton, O.

Detroit
E. G. Brick, Youngstown Sheet & Tube Co., Alloy Division, 4-138 General Motors Bldg., Detroit.

Golden Gate
R. S. Hirst, 2223 Channing Way, Berkeley, Calif.

Hartford
John P. Howley, Pratt & Whitney Co., Hartford, Conn.

Indianapolis
R. L. Fitzsimmons, 1342 No. Grant Ave., Indianapolis, Ind.

Lehigh Valley
H. L. Gifford, superintendent of Heat Treatment, Bethlehem Steel Co., Bethlehem, Pa.

Los Angeles
Charles F. Lewis, 421 No. Duane St., San Gabriel, Calif.

Milwaukee
J. Benton Druse, 626 E. Wisconsin Ave., Milwaukee, Wis.

Montreal
Miss B. W. Brownrigg, recording secretary, 11th floor, McGill Bldg., Montreal, P. Q., Canada.

Muncie
W. F. McCormack, Chrysler Corp., New Castle, Ind.

New Haven
P. L. Clark, Bridgeport Brass Co., Bridgeport, Conn.

New Jersey
John H. Johnson, Richelieu Terrace, Scotch Plains, N. J.

New York
T. N. Holden, 1219 Glenwood Rd., Brooklyn, N. Y.

Northwest
Alexis Caswell, 100 Builders Exchange Bldg., Minneapolis, Minn.

Notre Dame
W. F. Lewis, Notre Dame University, Notre Dame, Ind.

Ontario
L. F. Fitzpatrick, Flexible Shaft Co., Ltd., Toronto, Ont., Canada.

Philadelphia
Adolph O. Schaefer, 310 West Durham St., Mt. Airy, Philadelphia.

Pittsburgh
H. L. Walker, Box 521 N. S., Station, Pittsburgh.

Rhode Island
Carl G. Peterson, Providence Gas Co., Providence, R. I.

Rochester
Irving C. Matthews, Eastman Kodak Co., Rochester, N. Y.

Rockford
O. T. Muehlemeyer, 700 Race St., Rockford, Ill.

Schenectady
L. L. Wyman, metallurgist, General Electric Co., Schenectady, N. Y.

Southern Tier
W. S. Bennett, Elmira Water Light & R. R. Co., Elmira, N. Y.

Springfield
Thomas P. Jones, Chapman Valve Mfg. Co., Springfield, Mass.

St. Louis
C. M. Stevenson, Colonial Steel Co., 714 Cass Ave., St. Louis, Mo.

Syracuse
C. H. Parmelee, Onondaga Pottery, Syracuse, N. Y.

Tri-City
Wayne L. Cockrell, Burgess-Parr Co., Moline, Ill.

Washington
S. J. Rosenberg, Bureau of Standards, Washington, D. C.

Worcester
R. R. Tatnall, 38 Parkton Ave., Worcester, Mass.

York
Charles M. Strickler, General Machine Works, York, Pa.